Polymer Energy Absorber For Motor Vehicles And Bumper System

BACKGROUND

Field of Invention

[0001] The invention relates to a polymer energy absorber for motor vehicles which absorbs the kinetic energy released during collisions between motor vehicles and purposely discharges this energy. For this, the polymer absorber is installed in bumper systems and/or bumper arrangements of motor vehicles.

Related Art

[0002] Prior art discloses different types of energy absorbers which are presently used in the front and/or rear bumper areas of motor vehicles. These energy absorbers have different energy absorption capacities, owing to differences in material and design, as well as differences in the energy-absorption behavior for crash speeds in the typical range of 5 to 15 km/h. As a result of the spaces available for installing energy absorbers in the front and rear motor vehicle region, motor vehicle manufacturers prefer systems having an optimum force-distance characteristic for absorbing kinetic energy at the moment of collision, starting with an initially steep force increase with continuing energy absorption over time, which leads to a constant force level, so that the integral $\int F^*ds$ reaches a maximum value for the force-distance characteristic curve. Reversible and irreversible energy absorber systems for motor vehicles are described in prior art. Hydraulic damping elements are one example of reversible energy absorbers which show a differing response behavior during crashes, depending on the medium used. These hydraulic damping elements have a complex technical design and their weight

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